

REMARKS

Claims 12-15 are all the claims pending in the application.

Applicants have amended the paragraph bridging pages 7 and 8 of the specification to correct an obvious typographical error therein. Specifically, Example 3 is an example of one method of preparing the bridged clay of the invention. The steps mentioned under the heading "Example 3" from page 7, line 25, through page 8, line 3, result in the production of a bridged clay, as stated at page 8, line 3. The reference to "under the conditions described in Example 2" at line 6 of page 8 concerns the preparation of the nanocomposite by introducing 100 g of Escorene 1004 polyethylene into a mixer and 10 g of bridged laponite. Example 2 does not describe bridging.

No new matter has been added.

The final Office Action contains a single rejection. In particular, Claims 12-15 are rejected under 35 U.S.C. § 102(b) as being anticipated by U.S. Patent No. 5,866,645 ("US '645").

Applicants respectfully traverse.

At the sentence bridging pages 2 and 3 of the final Action, the Examiner states:

In prior art of PINNAVAIA, clay component is treated with ammonium compound and with alkali metal or alkali earth metal to result in mixed organic/inorganic intercalated clay.

Applicants respond by emphasizing that US '645 discloses only an intercalated clay. That is, the clay component of US '645 is intercalated with an inorganic metal precursor. US '645 does not disclose the preparation of a bridged clay.

The bridged clay of the invention is a clay in which its two adjacent lamellae are connected together with the help of the metal compound of the invention, the latter having a chemical link with each of these lamellae. As understood by one of ordinary skill in the art, a

chemical link is strong and irreversible. Thus, for obtaining a bridged clay of the invention, a metal compound must be inserted between the lamellae and bound chemically with them. A distinction between bridging and intercalating is that intercalating does not comprise the "chemical link" aspect of bridging. This distinction between bridging and intercalating is captured and reflected by use of the term "bridged" in Claim 12.

As an example of one method of preparing a bridged clay of the invention, Applicants refer to Example 3 at pages 7 and 8. Starting from a metal compound in hydroxide state, an appropriate heat treatment (300°C for 3 hours) serves to form a metal compound in an oxide state and hence to create conditions of the formation of chemical links involved in bridging. US '645 does not disclose the preparation of a bridged clay, and US '645 does not disclose the conditions needed to bridge, as, for example, no appropriate heat treatment is disclosed.

Next, the Examiner asserts (emphasis added):

In examples of the present invention, the applicants treat the clay component with metallic compound (example 3) and then *so treated clay* is utilized in example 5, where the applicants further treat it with ammonium.

Applicants respond by clarifying for the Examiner that Example 3 is an example of one method of preparing the bridged clay of the invention. That is, the steps mentioned in Example 3 result in the production of a bridged clay, as stated at page 8, line 3.

Example 5, on the other hand, is an example of the optional compatibilizing treatment mentioned at the paragraph bridging pages 5 and 6 of the specification. The "so treated clay," in bold and italics in the above excerpt from the final Office Action, is already a bridged clay. This is clear from page 8, lines 26-28. Example 5 merely subjects the already-bridged clay to a compatibilizing treatment using quaternary ammonium solution.

The Examiner then asserts:

Applicants also have clay component intercalated with both organic and inorganic components. In both cases the polymer component is mixed with the treated clay and at the end results in intercalation.

Applicants respond by emphasizing that although in both cases the polymer component is mixed with the treated clay, only in the presently claimed invention is the treated clay a bridged clay, for the reasons noted previously herein. As explained at page 2, lines 33-35, of the specification, the bridged clay of the invention facilitates intercalation of the organic compound.

Finally, at the first full paragraph at page 3 of the final Office Action, the Examiner asks "if after intercalation of the ammonium component is the clay actually bridged or do the chemical bonds between metal component and clay actually break, which would result in the process of PINNAVAIA."

Applicants respond by confirming for the Examiner that after subjecting the bridged clay of the present invention to a compatibilizing treatment using quaternary ammonium solution, the clay remains bridged. This is clear from Example 5, wherein the "double treatment" refers to the bridging from Example 3 and the compatibilizing from Example 5, and the product of the double treatment is referred to as an "organophilic bridged product." Furthermore, as mentioned previously, the chemical link of the claimed bridged clay is strong and irreversible.

Applicants submit that they have answered all of the questions raised by the Examiner in the final Office Action. For the reasons stated, withdrawal of the §102 rejection is respectfully requested. Thus, reconsideration and allowance of this application are now believed to be in order, and such actions are hereby solicited.

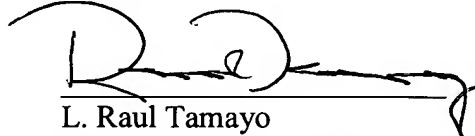
If any points remain in issue which the Examiner feels may be best resolved through a personal or telephone interview, the Examiner is kindly requested to contact the undersigned at the telephone number listed below.

AMENDMENT

U.S. Appln. No. 10/689,543

The USPTO is directed and authorized to charge all required fees, except for the Issue Fee and the Publication Fee, to Deposit Account No. 19-4880. Please also credit any overpayments to said Deposit Account.

Respectfully submitted,



L. Raul Tamayo

Registration No. 47,125

SUGHRUE MION, PLLC
Telephone: (202) 293-7060
Facsimile: (202) 293-7860

WASHINGTON OFFICE

23373

CUSTOMER NUMBER

Date: May 5, 2005